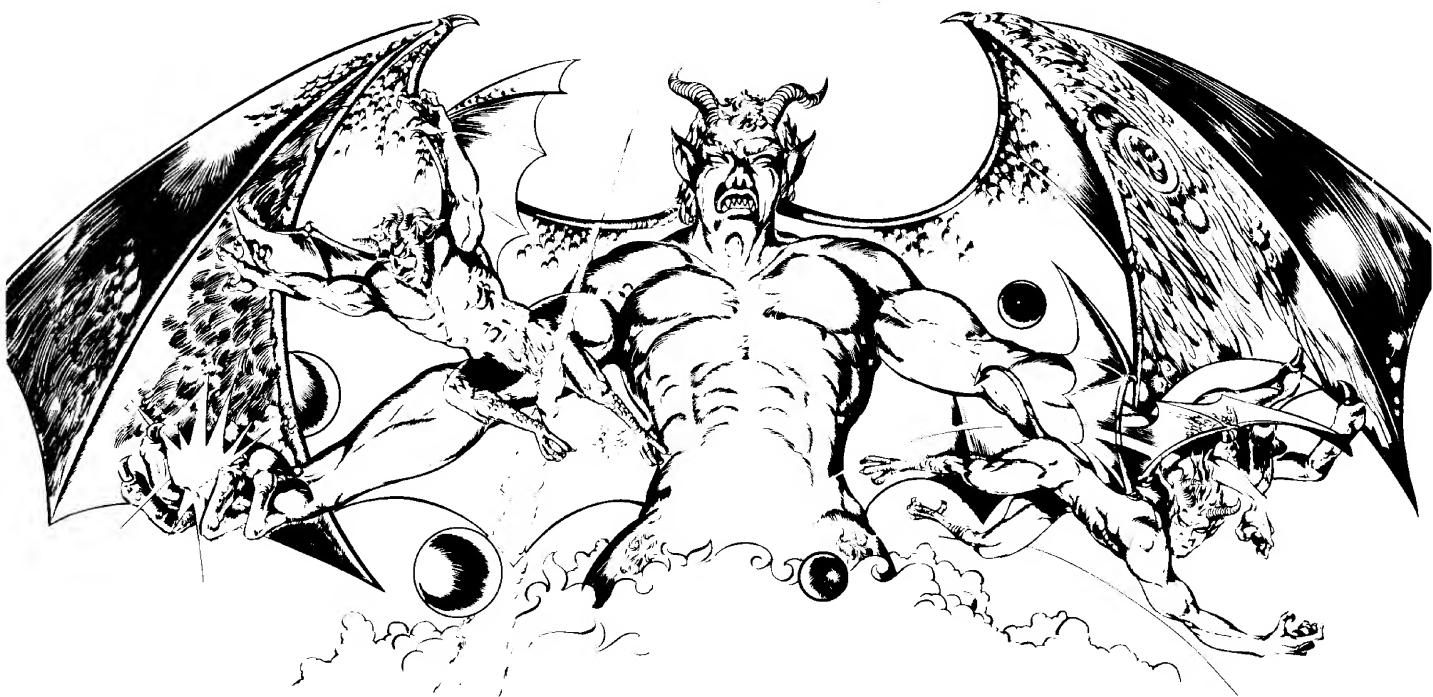


COSMIC ALIEN

Operation, Maintenance
and Service Manual



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— WHEN ORDERING PARTS —

Since each component part is indicated by block, definitely specify both the corresponding Fig. No. and part No. within the Fig. when placing an order for it.

I. FEATURES OF THIS MACHINE

1. The game packs in excellent features capturing the hearts of players.
2. The lever control system is simple to handle.
3. At the flick of a dip switch, you can select among extended play, the number of laser guns and time of appearance of an additional laser gun, etc.
4. High score for the day is always displayed on the screen.
5. Finely designed cabinet and fascinating acoustic effects.

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II. HOW TO HANDLE AND MAINTAIN THIS MACHINE

1. Since the UNIVERSAL's COSMIC ALIEN employs a color TV receiving set, be careful not to shake it during transit and when carrying it about.
2. Install it at a location which is not exposed to direct sunlight. In order to prevent the inside temperature rising, avoid as much as possible a location near a heater, etc.
3. Since the grounding terminal is visible, be sure to connect it to a grounding conductor.
4. Insert the power cord into the outlet and turn on the switch.
5. Even if the solid-state module seems to be out of order, do not check the circuit by means of a circuit tester, etc., since the internal voltage of the tester, etc. may sometimes break down the IC.
6. Make sure the machine is well ventilated. If the temperature of the IC and transistor is lower than 60°C, they function normally and may be considered reliable. If it exceeds 60°C, their performance cannot be guaranteed.
7. Make sure that the connector, etc. is not disconnected.
8. Whenever connecting the power cord of the solid-state module to, or disconnecting it from, the outlet, be sure to turn the power off.
9. Although the products of UNIVERSAL are manufactured with the utmost care, they may develop malfunctions when used for long periods. So, be sure to check this machine daily.

III. HOW TO PLAY

1. Drop in a coin when playing by yourself. Drop in two coins when playing with a friend.
2. When pressing either one- or two-player button after inserting a coin or two, the game starts. Play it by handling a lever for moving the space ship from side to side a FIRE button.
3. Aliens floating high in the air suddenly roll, rushing towards the spaceship to assault it. While warning aliens don't launch missiles, assaulting aliens do when they get near the spaceship — or they hurtle into it.
4. Each time 2 screens have been cleared (or on the 3rd screen) or when 4 screens cleared (or on the 5th screen), the aliens' shape changes and, at the same time, the spaceship comes nearer the aliens by one stage. Your spaceship is then sometimes exposed to the danger of being crashed into from behind by aliens which have dived, making the game even more exciting.
5. The present screen's number is displayed on the bottom right.
6. Aliens are either a chief, guards, commanders or soldiers, and they each have own mode of assault and points awarded. When an assaulting alien is hit, a double score is awarded compared to when the same alien is hit while warning. Every time the screen is cleared, the score level rises.
7. The number of points to be awarded when the assaulting chief alien is hit, is set differentially. That is, if you hit him while assaulting alone, you are awarded a higher score than when you hit him while being escorted by the guards. If you destroy the three guards and chief alien during one diving attack round, you are awarded the highest score.
8. When only one alien remains on the screen, he changes into an immense alien rushing to assault the spaceship.
9. From the 7th screen on, the aliens are able to dodge the assaulting missiles of the spaceship — their assaulting pattern also changes. From the 10th screen on, these changes are even more accelerated, making screen clearance increasingly difficult.
10. You are given 3 spaceships for one game. If your score exceeds 5,000 points, you are awarded a reserve spaceship. (The starting number of spaceships and points over which a reserve ship is awarded, can be changed by dip switches.)

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IV. NOMENCLATURE OF EACH PART

A. NOMENCLATURE OF CABINET PARTS

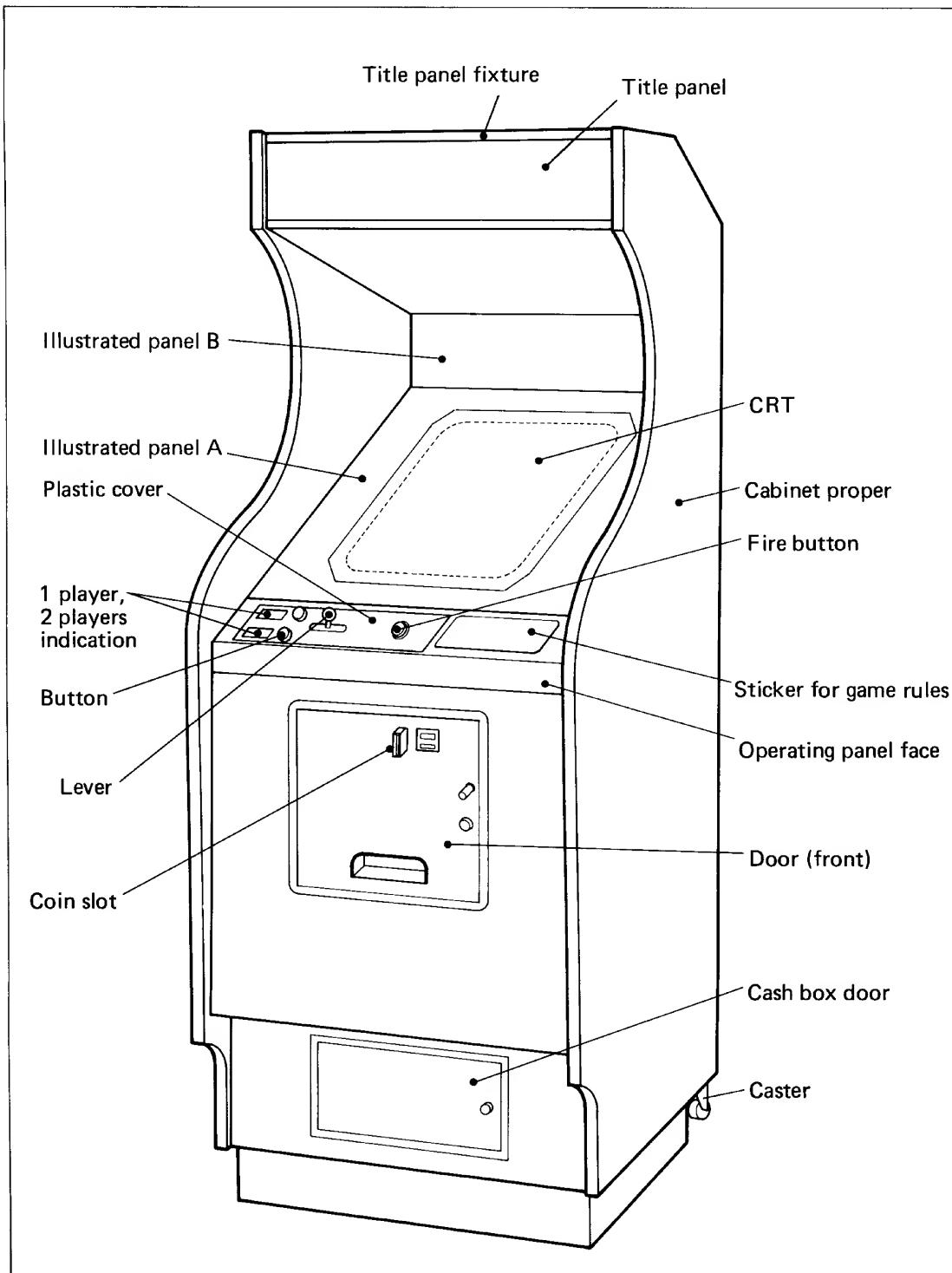


Fig. 1-1 Nomenclature of Cabinet Parts

B. DRAWING OF CIRCUIT BOARD MOUTING POSITIONS

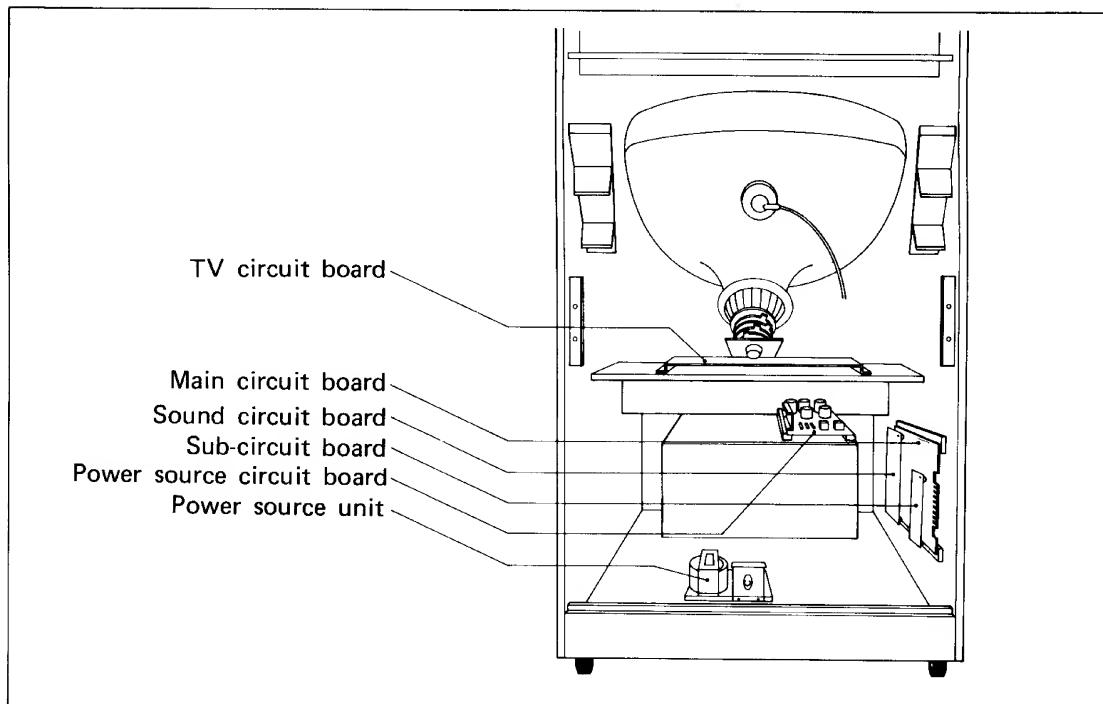


Fig. 2-1 Circuit Board Mounting Positions

Main circuit board and its container

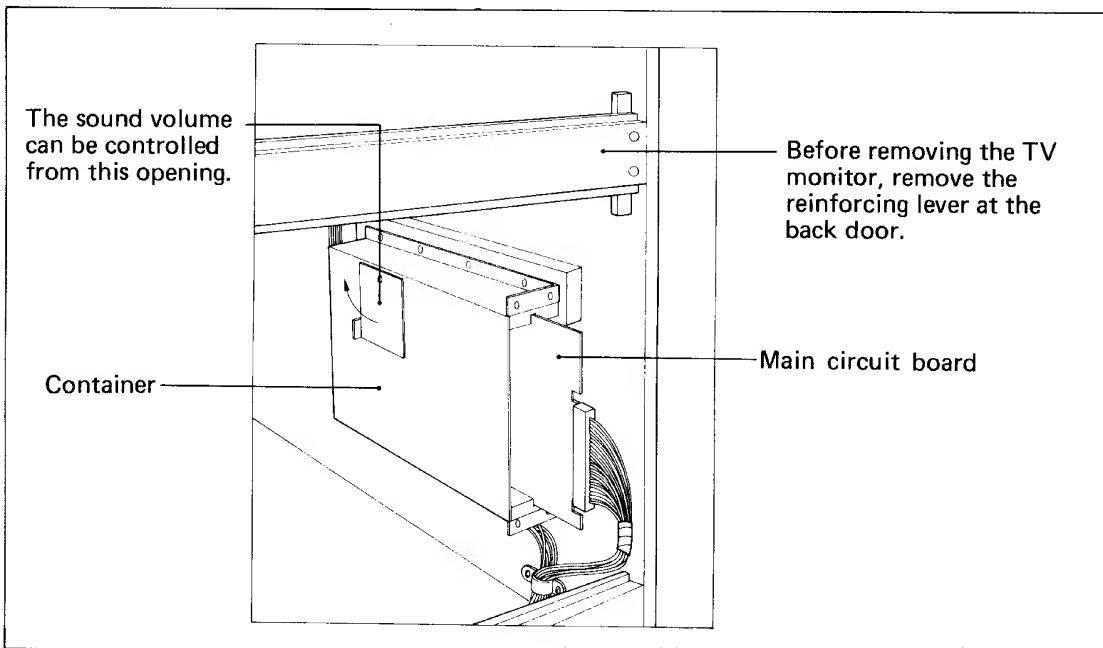
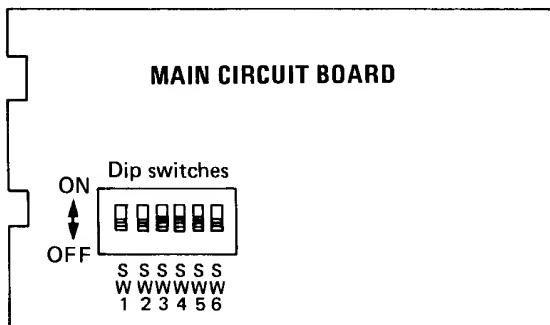


Fig. 2-2 Side View of Circuit Board Mounting Positions

C. POSITIONS OF DIP SWITCHES AND VOLUME CONTROLLER KNOBS**Fig. 3-1 Positions of Dip Switches****a) Setting the option (dip switches)**

COSMIC ALIEN is designed to have various operations set by the ON-OFF combinations of the dip switches. When starting a game, choose any desired game option and set the dip switches accordingly.

1. Setting the required score for an additional spaceship:

(Dip switches SW1, 2)

Score	SW1	SW2
5,000 pts	OFF	OFF
10,000 pts	ON	OFF
15,000 pts	OFF	ON
(No bonus addition)	ON	ON

(Set at 5,000 points when shipped)

2. Setting the game charge: (Dip switches SW3, 4)

Credit	SW3	SW4
1 coin 1 play	OFF	OFF
1 coin 2 plays	ON	OFF
2 coins 1 play	OFF	ON

3. Setting the number of spaceships:

Number of spaceships	SW5
3	OFF
5	ON

(Set at 3 spaceships when shipped)

4. Change-over setting of the mode of game (SW6):

The game may be enjoyed either as an upright or table type.

(When used as a table type for 2-player action, the table turns over.)

For upright use ON

For table use OFF

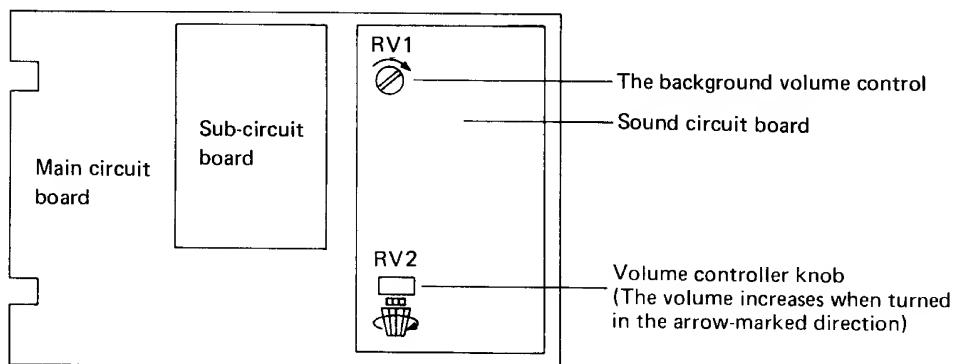
b) Volume controller knobs

Fig. 3-2 Positions of Volume Controller Knobs

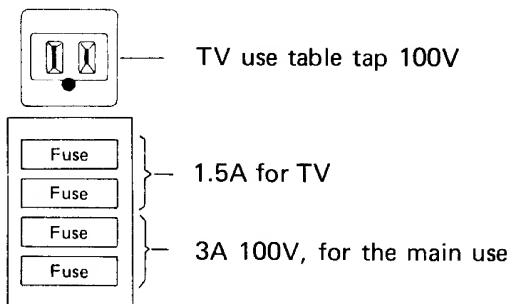
c) Fuses in the power unit

Fig. 3-3 Fuses in the Power Unit

V. TV MONITOR

A. ADJUSTMENT OF TV PICTURE SCREEN

Since the TV picture screen has been factory-adjusted to optimum conditions at the time of shipment, it needs no adjustment as a rule. If it should by chance need adjustment, adjustment is possible to some extent by manipulating the knobs which appear in the wiring drawing (22").

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VI. PARTS CATALOG

A-1 COMPONENT PARTS RELATED TO CABINET (OUTSIDE)

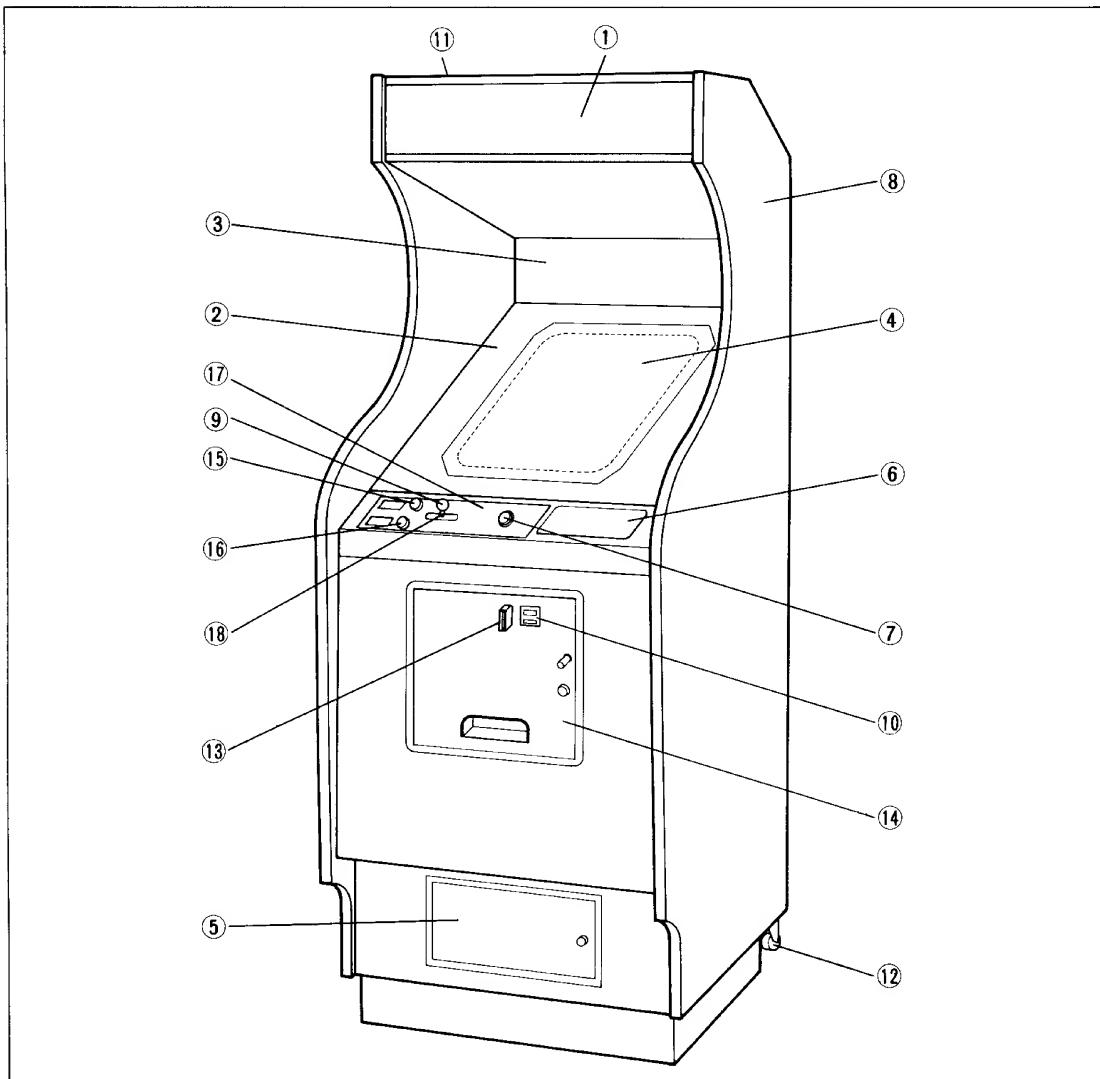
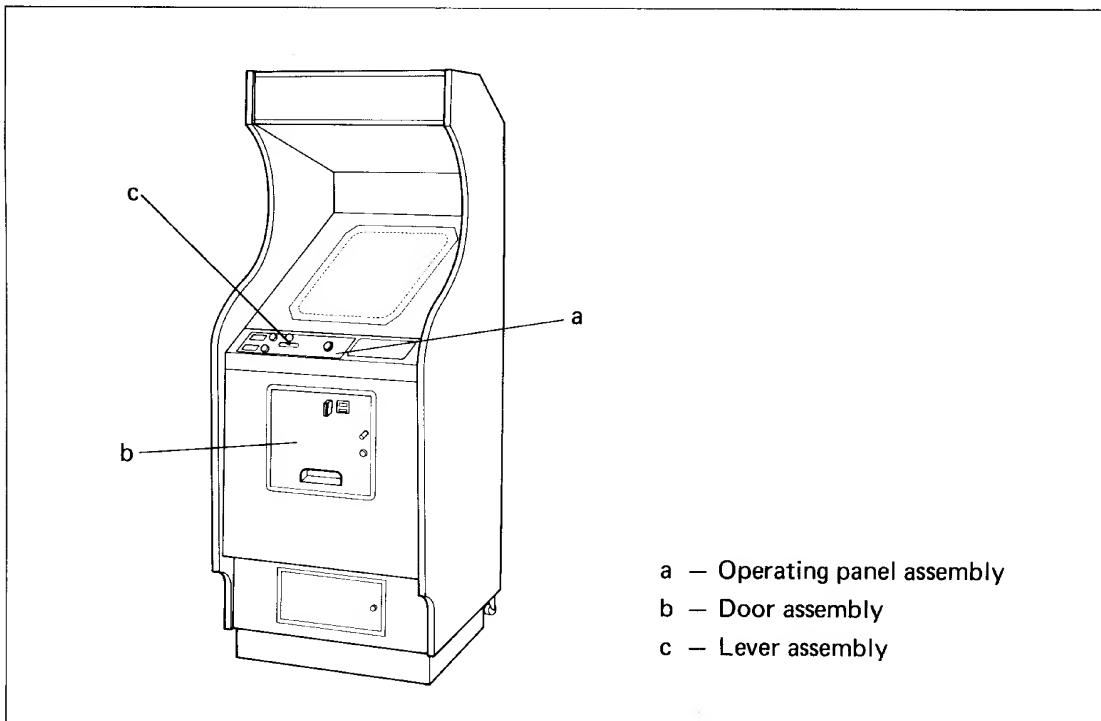
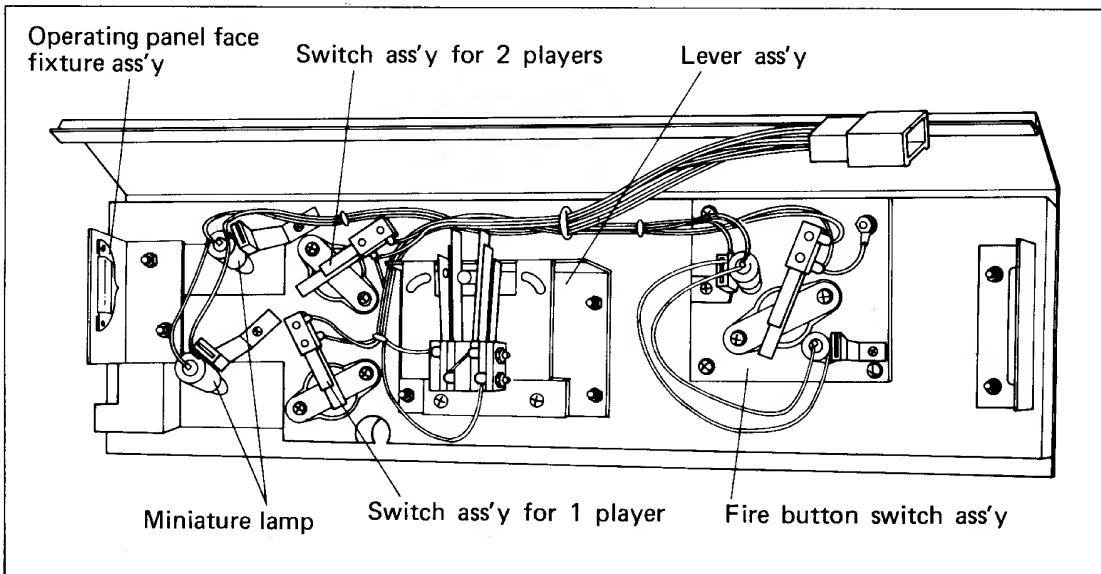


Fig. 4-1 Component Parts Related to Cabinet (Outside)

OUTSIDE CABINET PARTS LIST

Ref. No.	Name	Ref. No.	Name
1	Title panel	11	Title panel fixture
2	Illustrated glass A	12	Caster
3	Illustrated glass B	13	Coin slot
4	CRT	14	Main door
5	Cash box door	15	Push button (1 player)
6	Sticker for game rules	16	Push button (2 players)
7	Push button (Fire)	17	Operating indication panel
8	Cabinet proper	18	Control lever (general name)
9	Knob 32-Dim.		
10	Coin indication panel		

A-2 COMPONENT PARTS RELATED TO CABINET (INSIDE)**Fig. 4-2 Component Parts Related to Cabinet (Inside)****a) Operating panel assembly****Fig. 4-3 Operating Panel Assembly**

b) Door assembly

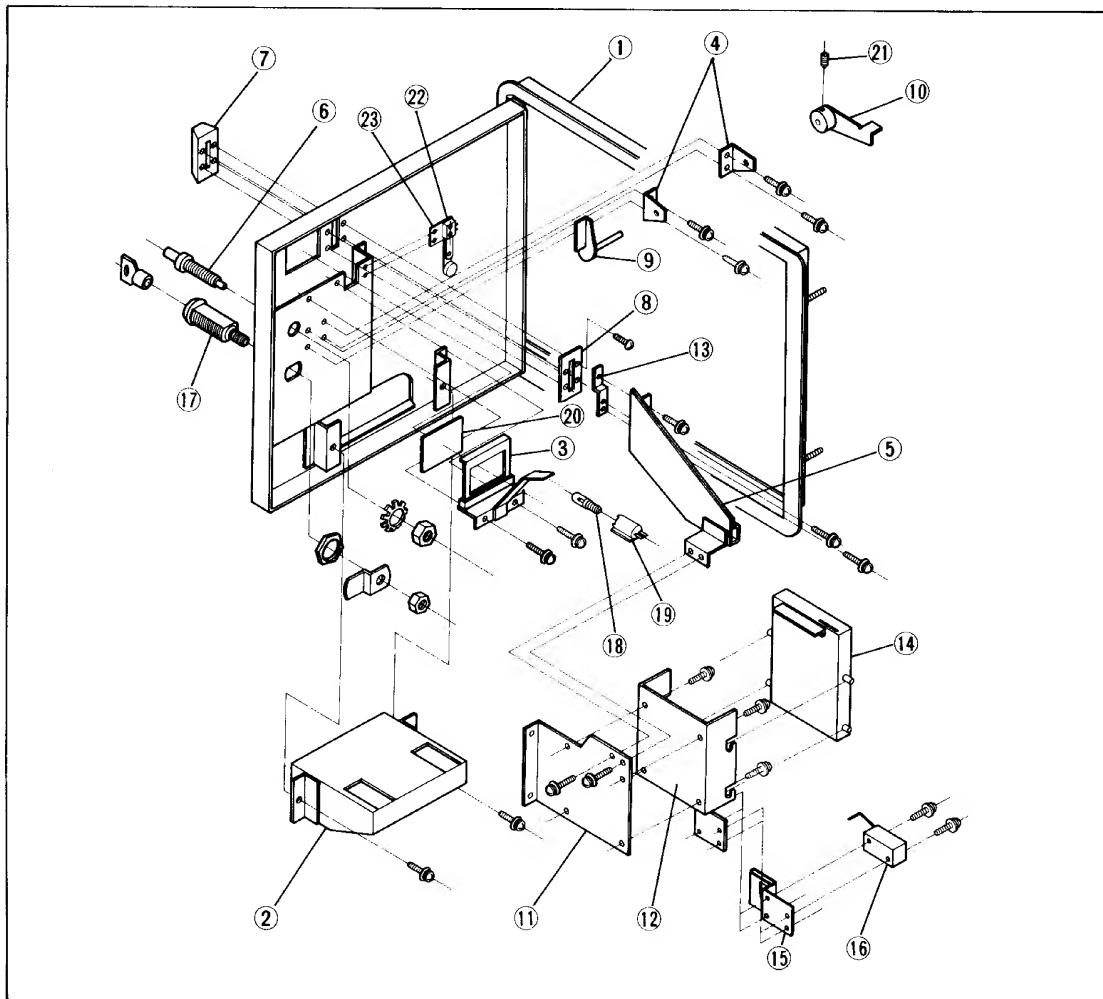


Fig. 4-4 Inside View of Door Assembly

DOOR ASSEMBLY PARTS LIST

Ref. No.	Name	Ref. No.	Name
1	Main door	13	Coin slot shute holder
2	Returning soucer	14	Rejector
3	Lamp & plastic plate bracket	15	Sensor slot
4	Rearing	16	Micro switch
5	Coin slot shute	17	Key sets
6	Returning button	18	Miniature lamp
7	Coin slot	19	Miniature lamp socket
8	Slot plate	20	Coin indication panel
9	Transmission shaft	21	Hexagon socket head screw
10	Rotary bracket	22	Slam switch
11	Rejector bracket	23	Slam switch holder
12	Rejector case		

c) Lever assembly and parts list

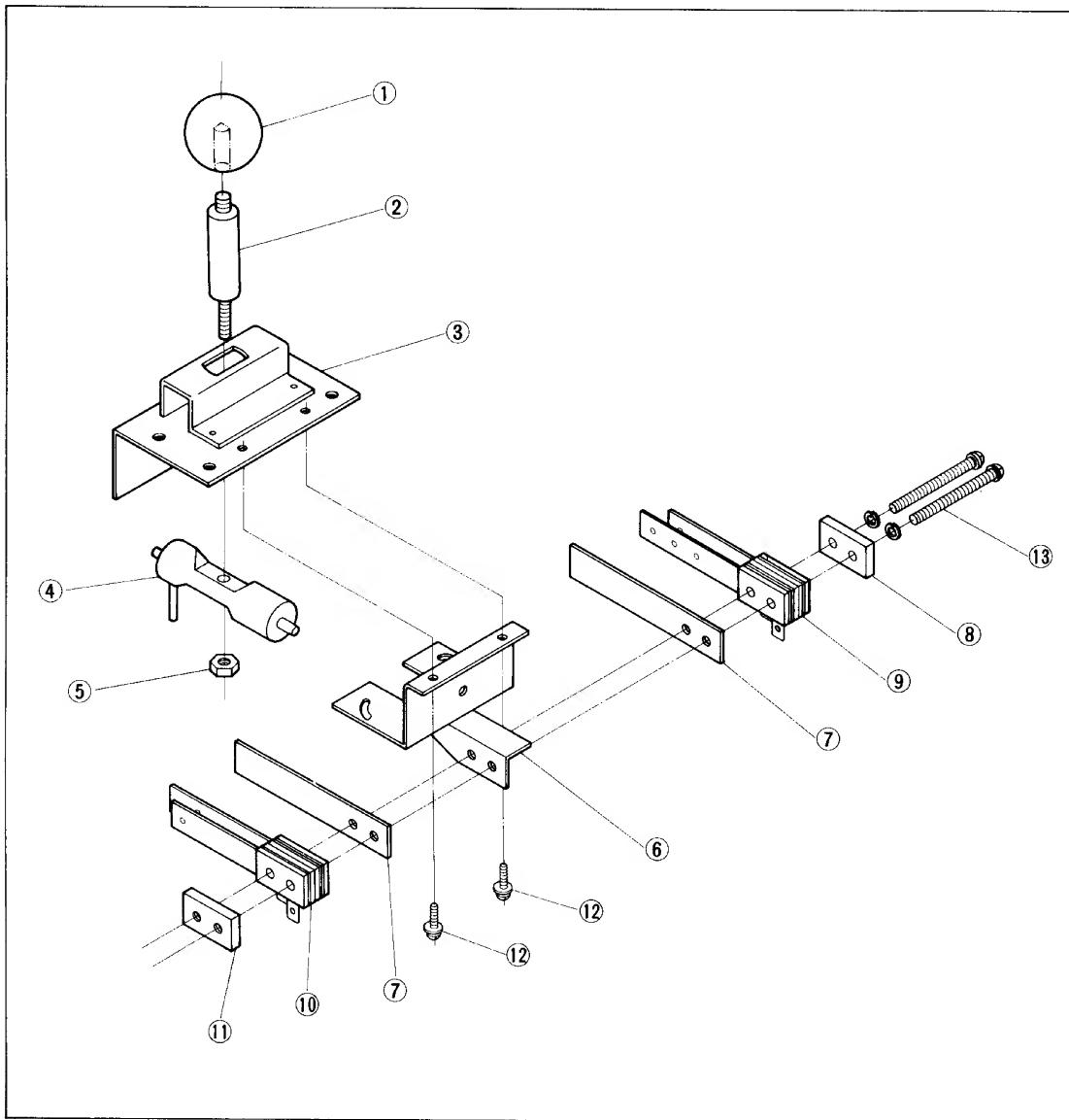
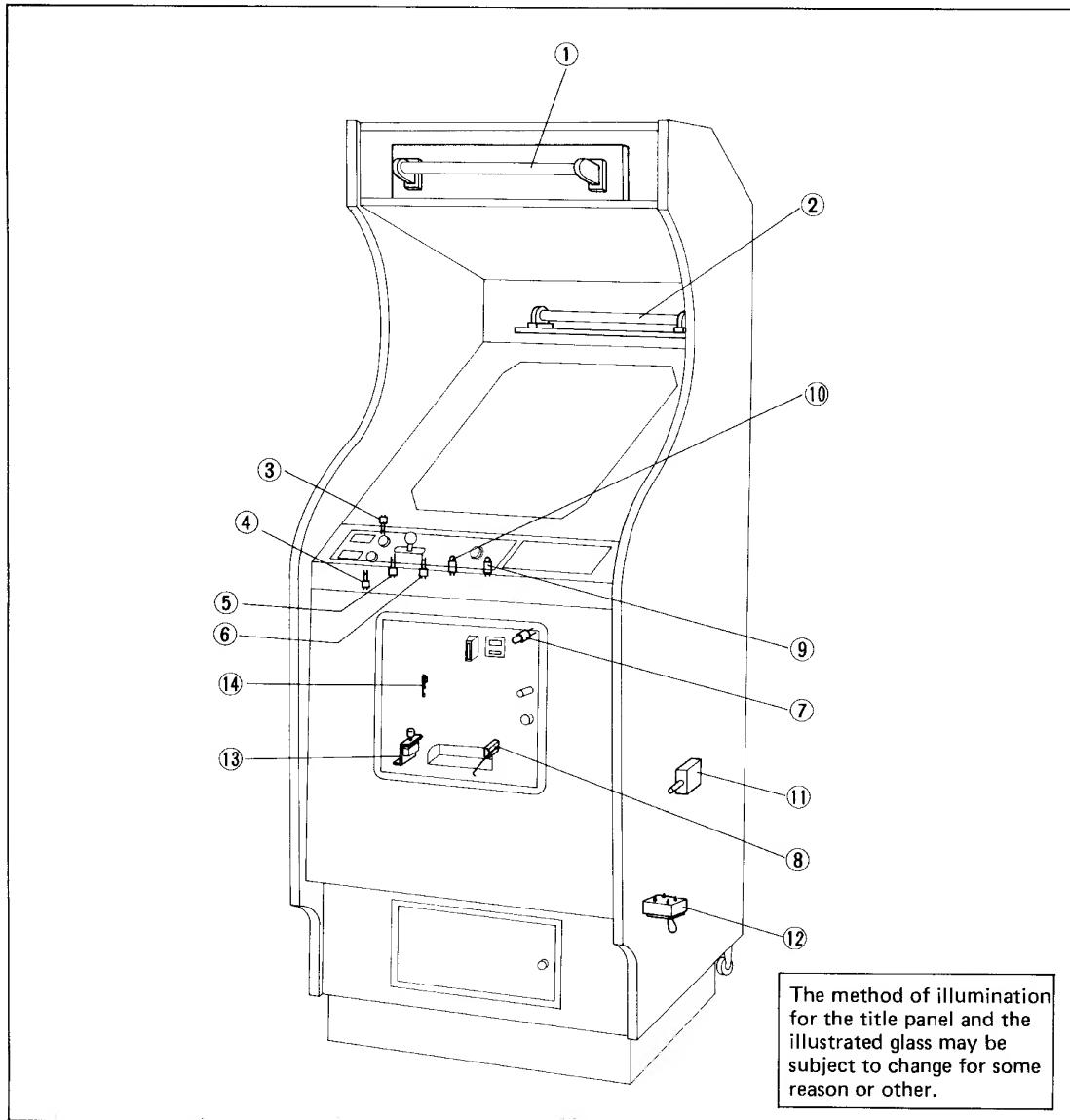


Fig. 4-5 Lever Assembly

LEVER ASSEMBLY PARTS LIST

Ref. No.	Name	Ref. No.	Name
1	Knob 32-Dim.	8	Spring holder
2	Lever shaft	9	Blades switch
3	Lever guide & stopper	10	Blades switch
4	Transmission bar	11	Spring holder with nut
5	Nut with stopper	12	Bolt
6	Switch bracket	13	Bolt
7	Spring		

B. COMPONENT PARTS RELATED TO SWITCHES IN THE CABINET**Fig. 5-1 Component Parts Related to Switches in the Cabinet****INSIDE CABINET PARTS LIST**

Ref. No.	Name	Ref. No.	Name
1	Fluorescent lamp assembly	8	Micro switch
2	Fluorescent lamp assembly	9	Miniature lamp assembly
3	Blades switch	10	Miniature lamp assembly
4	Blades switch	11	Door switch
5	Blades switch	12	Toggle switch
6	Blades switch	13	Micro switch
7	Miniature lamp assembly	14	Slam switch

C. CIRCUIT BOARD IC LOCATION AND PARTS LIST

a) Main circuit board IC location

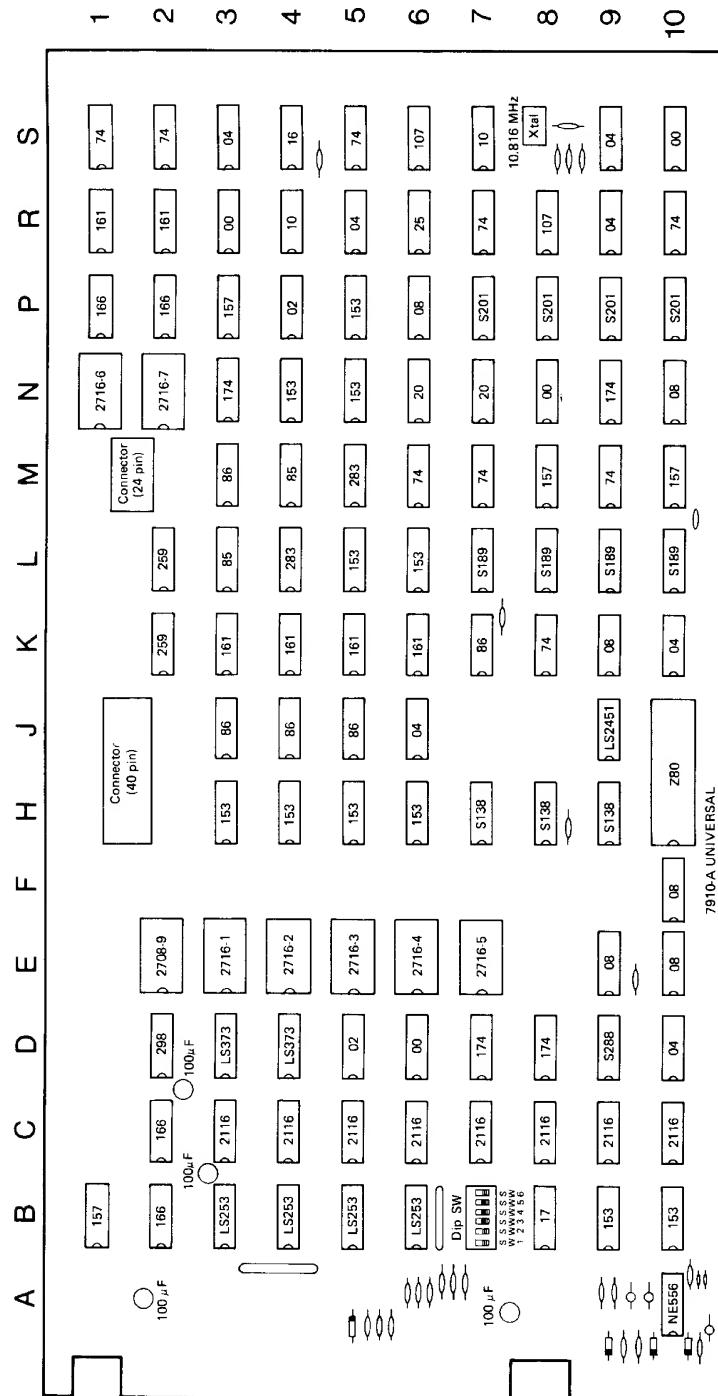


Fig. 6-1 Main Circuit Board

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b) Main circuit board parts list

[1] Integrated Circuit

Item No.	Q'ty	Description
7400N	4	Transistor Logic
02N	2	"
04N	7	"
08N	7	"
10N	2	"
16N	1	"
17N	1	"
20N	2	"
25N	1	"
74N	9	"
85N	2	"
86N	5	"
107N	2	"
S138N	2	"
153N	11	"
157N	4	"
161N	6	"
166N	4	"
174N	4	"
S189N	4	64 bits Bipolar RAM
S201N	4	256 bits Bipolar RAM
LS245N	1	Transistor Logic
LS253N	4	"
259N	2	"
283N	2	"
S288N	1	256 bits Bipolar ROM
298N	1	Transistor Logic
LS373N	2	"
2116	8	Nch MOS 16K bits Dynamic RAM
2708	1	Nch MOS 8K bits EPROM
2716	7	Nch MOS 16K bits EPROM
Z80	1	Nch MOS CPU
NE556	1	Transistor Logic

[2] Other Semiconductor Devices

Item No.	Q'ty	Description
10D1	4	Diode

[3] Capacitors

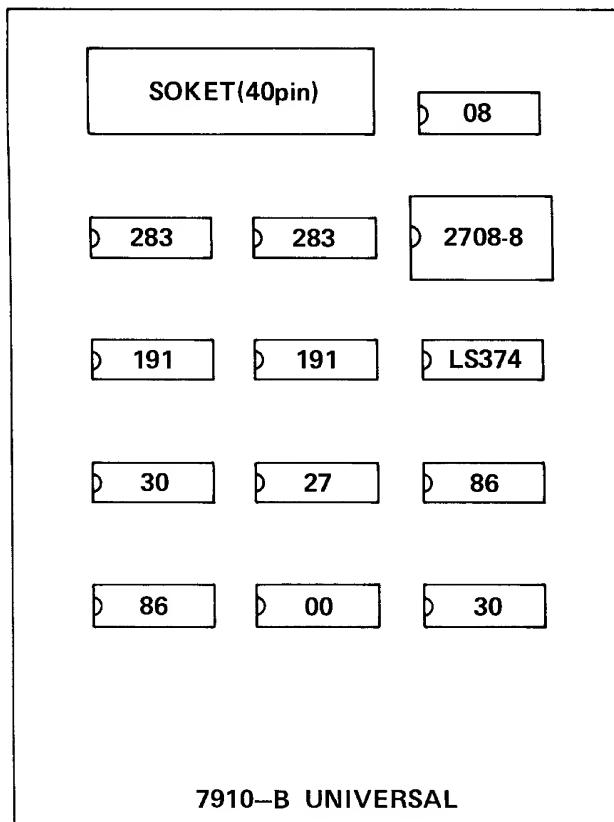
Rating	Q'ty	Description
100PF/12V	2	Ceramic Capacitor
150PF/12V	1	"
0.1μF/12V	55	"
1μF/50V	1	Chemical Capacitor
10μF/16V	2	"
100μF/25V	4	"

[4] Resistors

Rating	Q'ty	Description
MS1028AM	2	1KΩ Resistor Array
47Ω 1/4W	3	Carbon Solid Resistor
270Ω "	8	"
330Ω "	2	"
1KΩ "	5	"
4.7KΩ "	1	"
47KΩ "	2	"

[5] Misc

Name	Q'ty	Description
Dip SW	1	8 Elements Switch Array
X'-tal	1	10.816MHz

c) Sub-circuit board IC location and parts list**Fig. 6-2 Sub-Circuit Board****[1] Integrated Circuit**

Item No.	Q'ty	Description
7400N	1	Transistor Logic
08N	1	"
27N	1	"
30N	1	"
86N	2	"
191N	2	"
283N	2	"
LS374N	1	"
2708	1	Nch MOS 8K bits EPROM

[2] Other Semiconductor Devices

Rating	Q'ty	Description
0.1μ/12V	9	Cemical Capacitor

d) Sound circuit board IC location

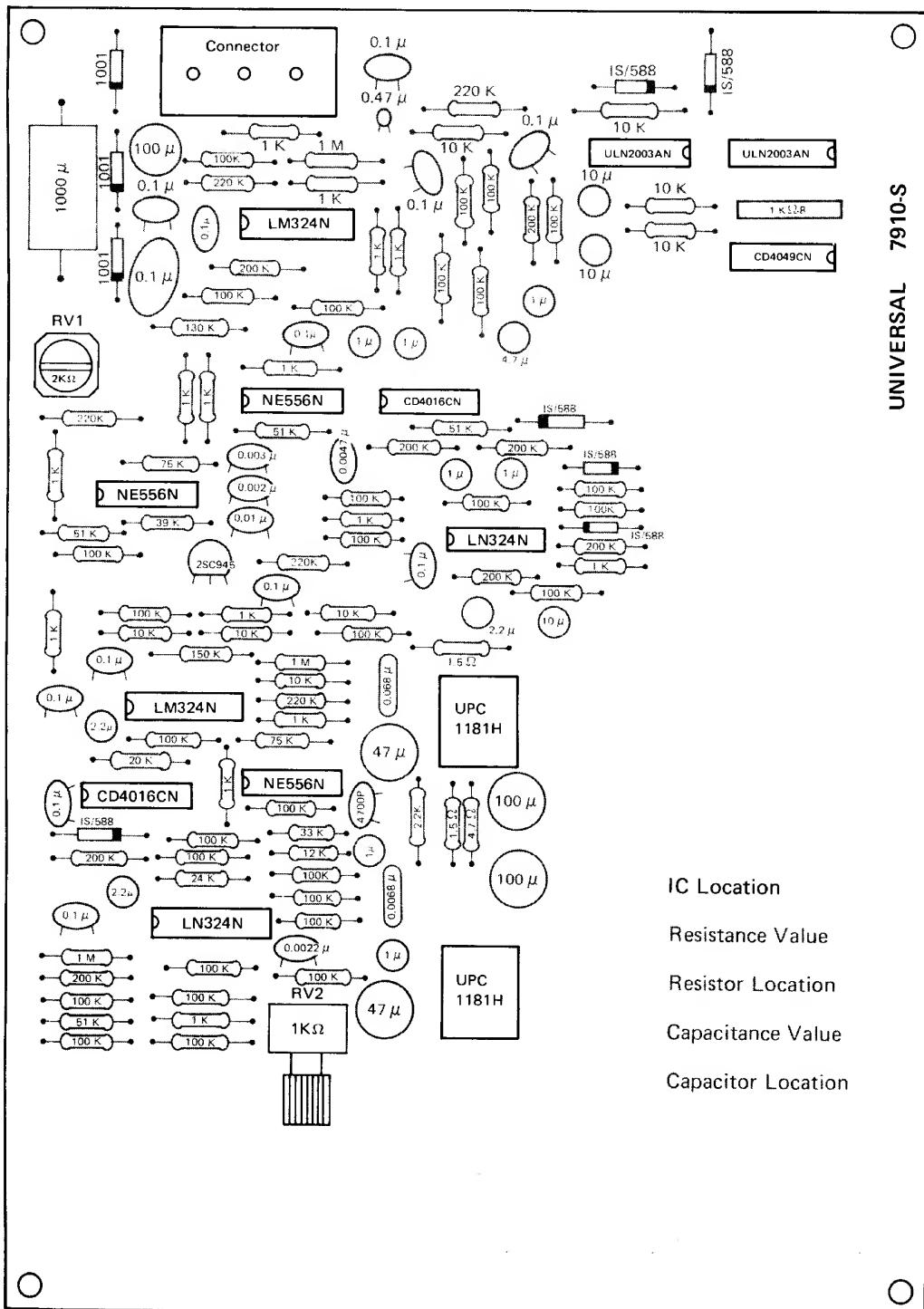


Fig. 6-3 Sound Circuit Board

e) Sound circuit board parts list**[1] Integrated Circuit**

Item No.	Q'ty	Description
LM324	4	Quadruple Operational Amplifiers
NE556	3	Dual Timer
2003	2	Darlington Transistor Array
4016	2	Quad Bilateral Switch
4049	1	Hex Buffer/Converter Inverting Type
MPC1181H	2	Power Amplifiers

[2] Other Semiconductor Devices

Item No.	Q'ty	Description
1S1588	6	Switching Diode
10D1	3	Diode
2SC945	1	N-P-N Transistor

[4] Resistors

Rating	Q'ty	Description
1.5Ω 1/4W	2	Carbon Solid Resistor
4.7Ω "	1	"
1K "	15	"
2.2K "	1	"
10K "	9	"
12K "	1	"
20K "	1	"
24K "	1	"
33K "	1	"
39K "	1	"
51K "	4	"
75K "	2	"
100K "	27	"
130K "	1	"
150K "	1	"
200K "	8	"
220K "	7	"
1M "	3	"

[3] Capacitors

Rating	Q'ty	Description
0.0022μF	2	Ceramic Capacitor
0.003μF	1	"
0.0047μF	2	"
0.01μF	1	"
0.068μF	2	Polyester Film Capacitor
0.1μF	15	Ceramic Capacitor
0.47μF	1	Tantalum Capacitor
1μF/50V	6	Chemical Capacitor
2.2μF/16V	3	"
4.7μF/16V	1	"
10μF/16V	3	"
47μF/25V	2	"
100μF/25V	3	"
1,000μF/25V	1	"

[5] Misc

Item No.	Q'ty	Description
RV16YP	1	1KΩ (B) Variable Resistor
RGP102-1	1	2KΩ (B) Trimmer
MS1028AM	1	1KΩ Resistor Array

VII. WIRING DIAGRAM

a) Wiring diagram (connector)

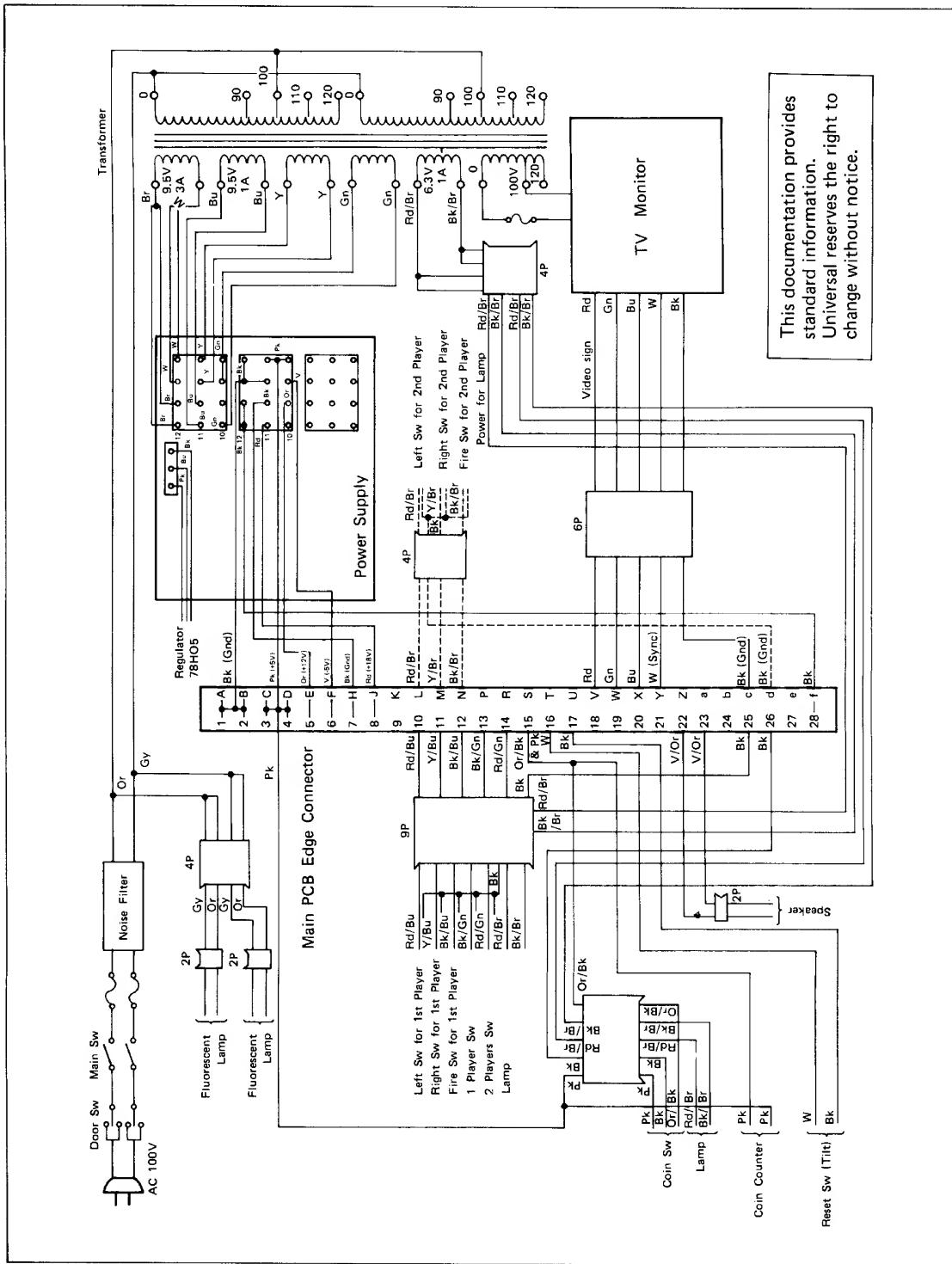
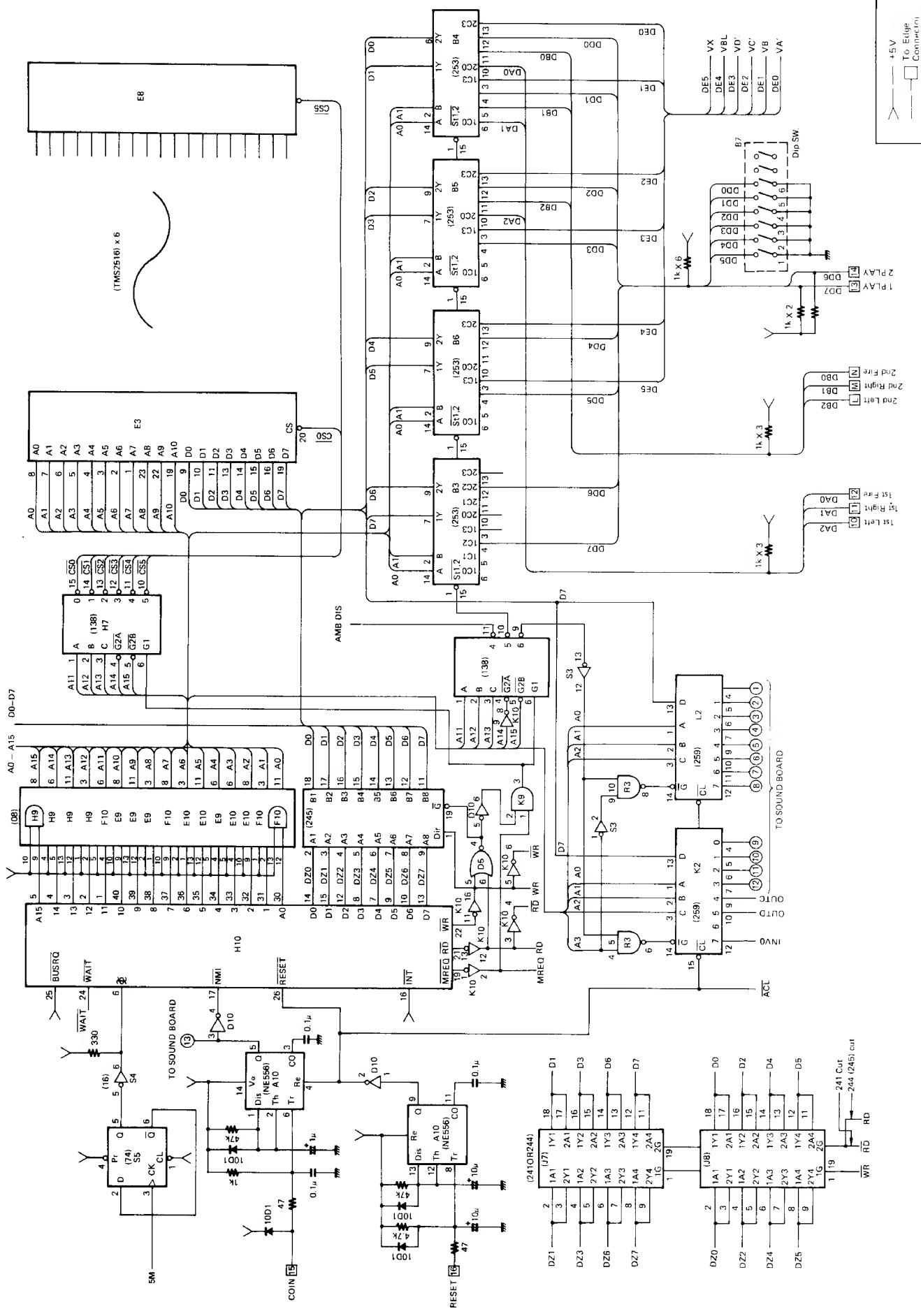


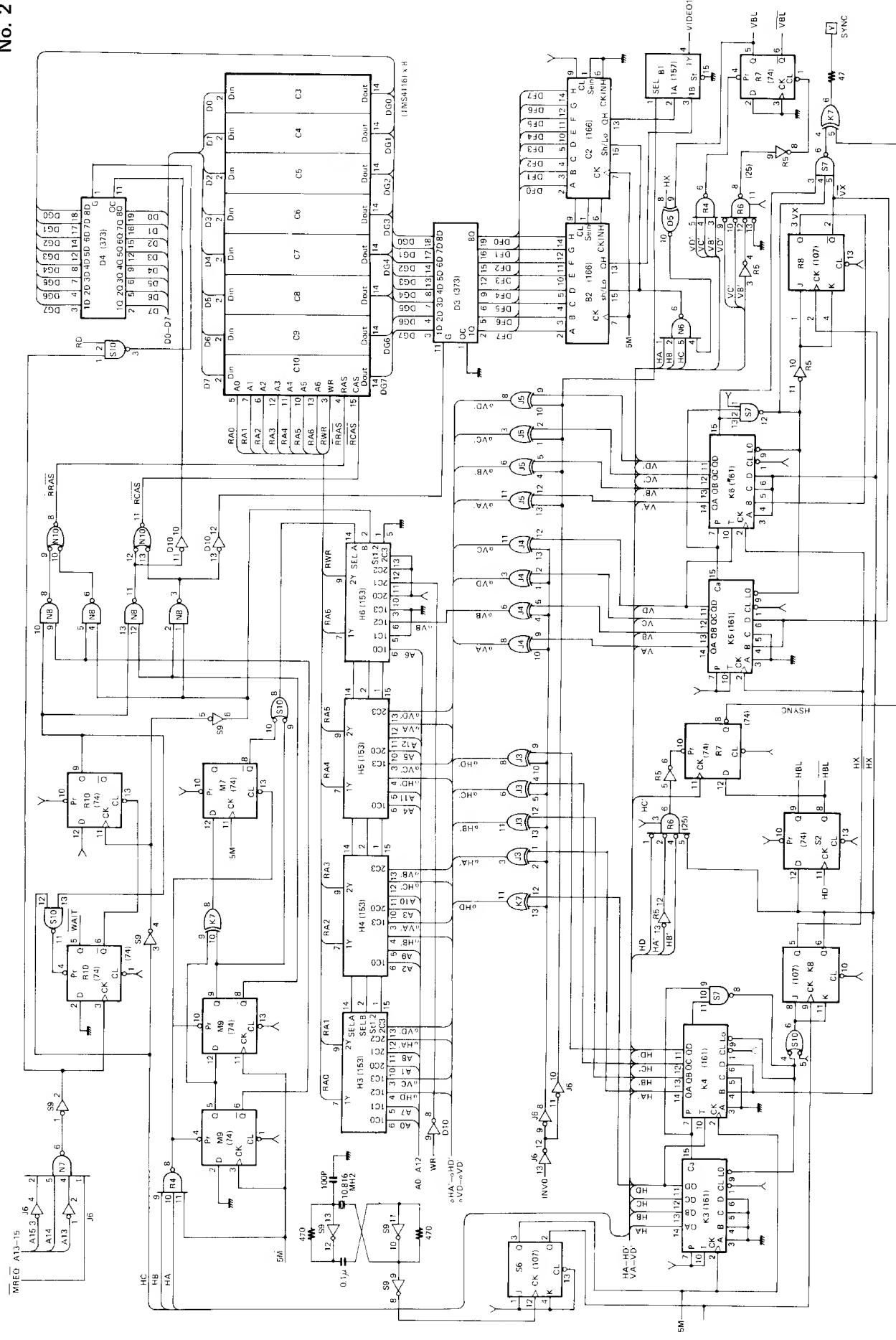
Fig. 7-1 Wiring Diagram

COSMIC ALIEN

MAIN BLOCK DIAGRAM

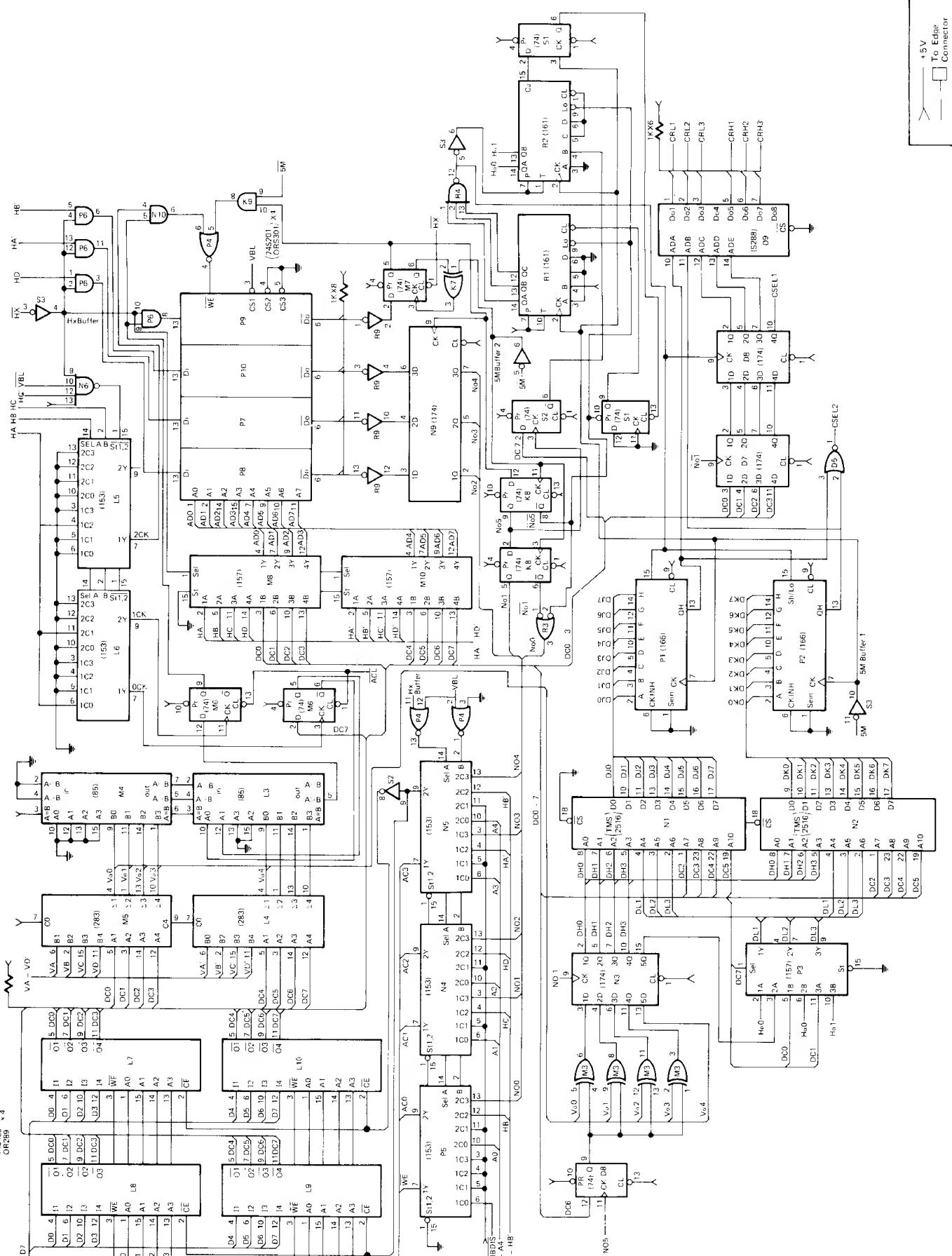
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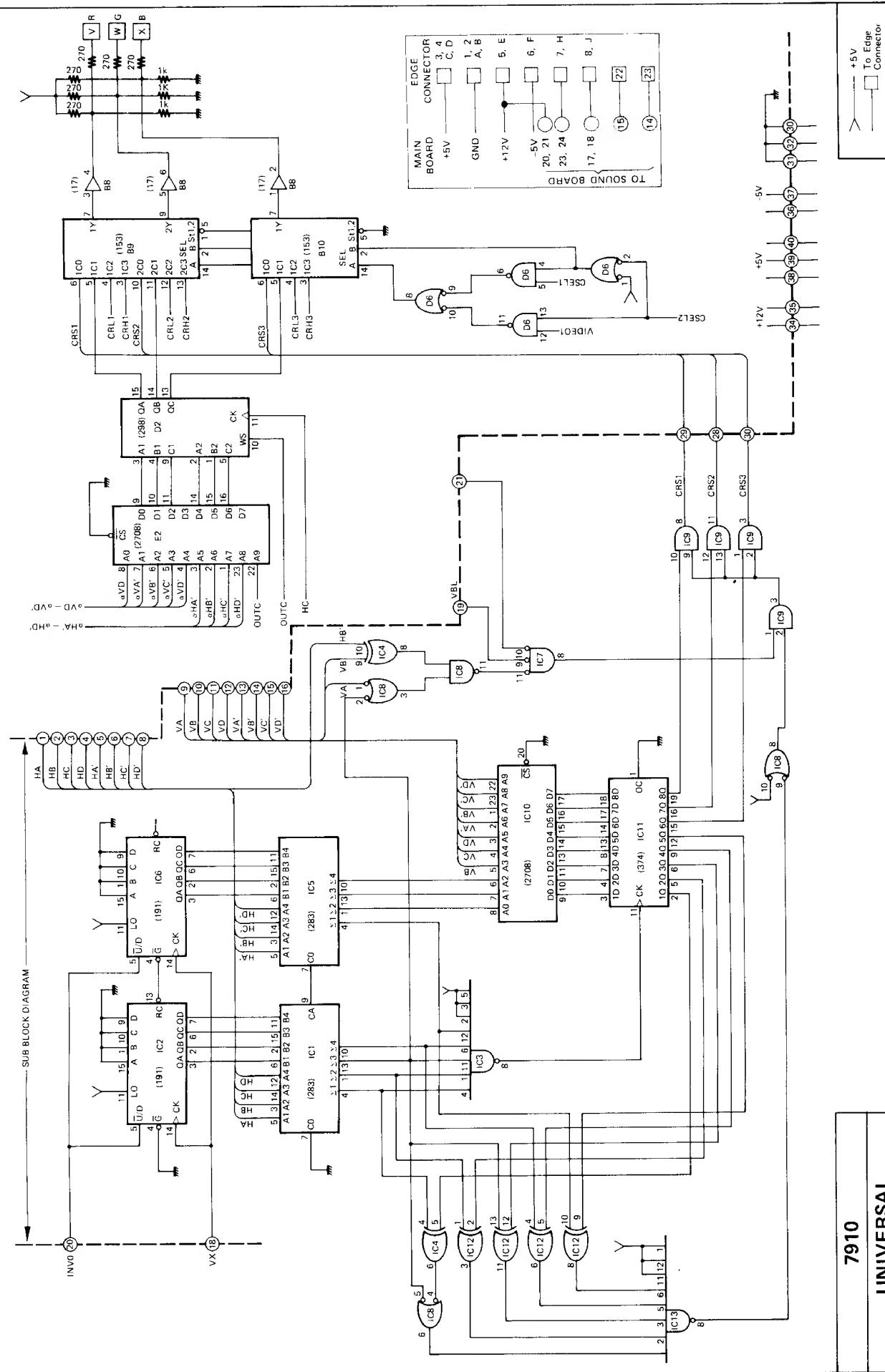


COSMIC ALIEN

MAIN BLOCK DIAGRAM

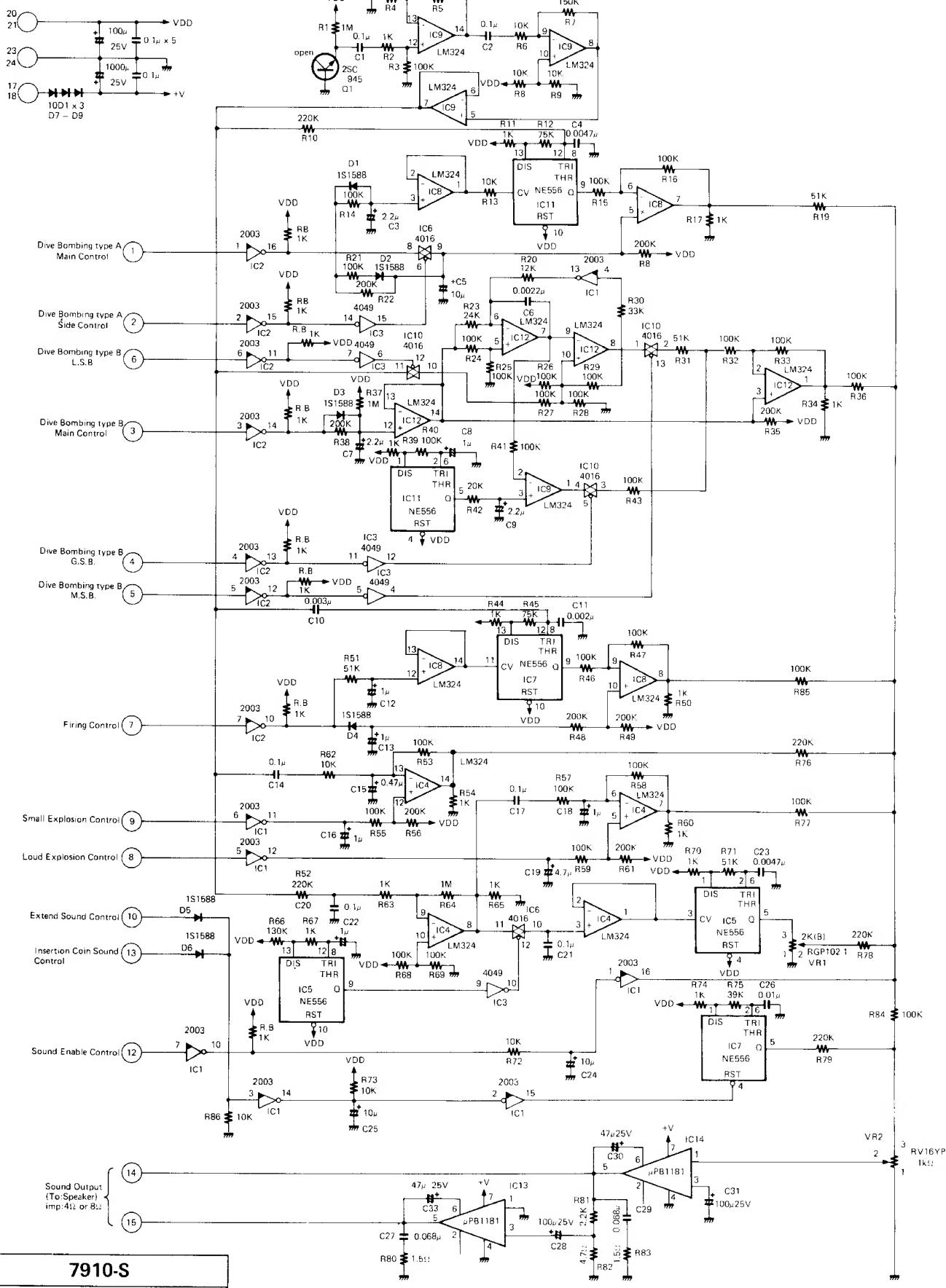


No. 4



COSMIC ALIEN

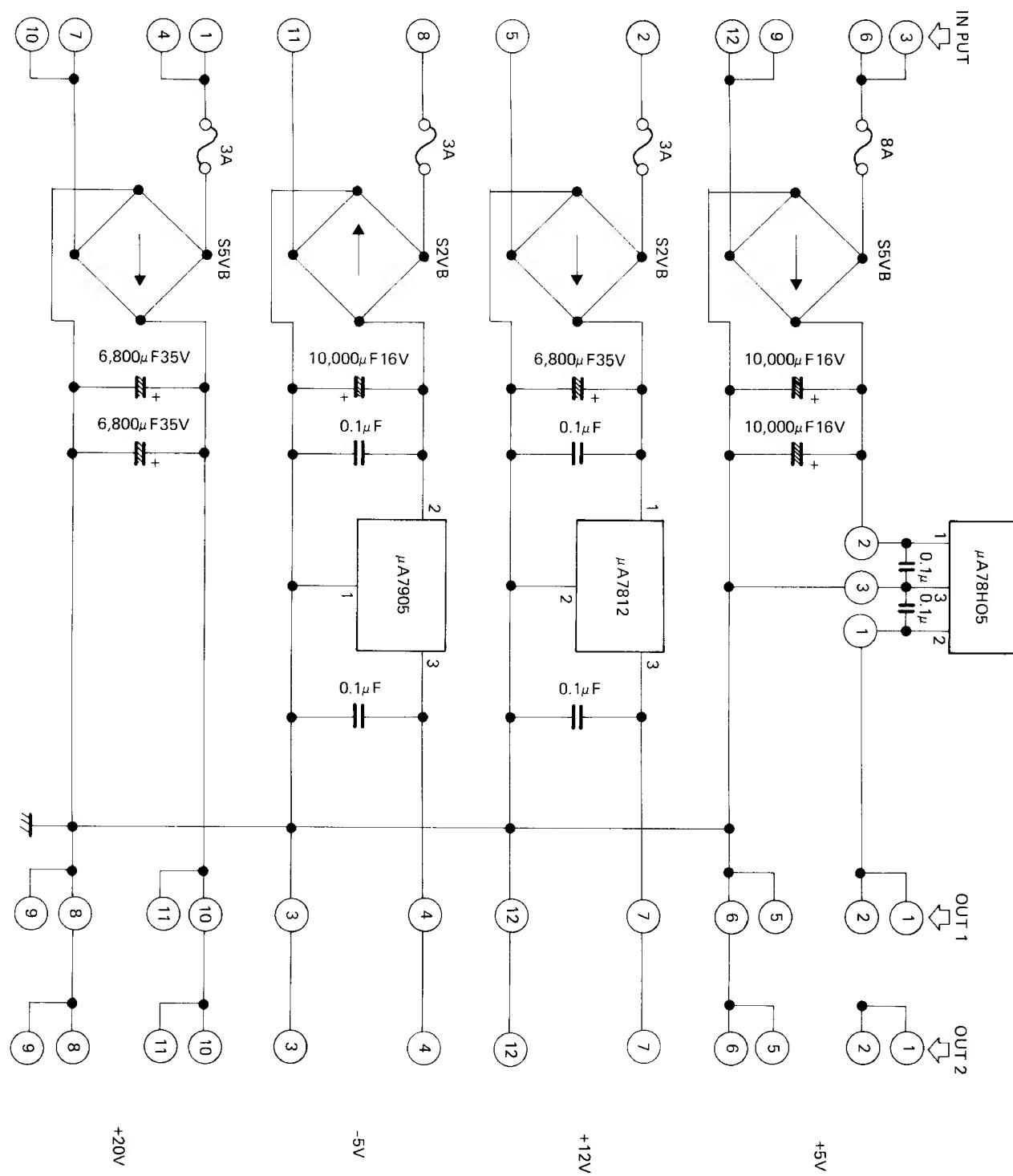
SOUND BLOCK DIAGRAM



7910-S

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POWER SOURCE BLOCK DIAGRAM



7910

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